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# Development of a Role-Based Mobile Application for Operational Digitalization in Sumatra Jewelry Store

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**Abstract**

Operational activities in many jewelry stores are still managed manually using paper-based records, which often cause miscommunication, data loss, and delays in order processing. This study focuses on the development of a role based mobile application to support the digitalization of operational processes in a jewelry store environment. The application was developed using the Waterfall method and implements a client-server architecture with a relational database to manage orders, task assignments, and inventory data in an integrated manner. Each user role, including sales, workers, and inventory administrators, is provided with specific access rights and functionalities according to their responsibilities.. The results show that the proposed application improves workflow transparency, enhances data accuracy, and simplifies real-time order tracking across different operational stages. The digital system also assists store owners in monitoring performance and making more informed decisions. Overall, the implementation of the mobile application demonstrates its effectiveness in improving operational efficiency and reducing miscommunication compared to the previous manual system.

***Keywords***: *Mobile application; Operational digitalization; Relational database; Role-based system; Jewelry store*

## 1. Introduction

The rapid development of information technology has encouraged various business sectors to adopt digital solutions in order to improve efficiency and accuracy in daily operations. Digitalization enables data to be recorded, stored, and distributed in a more structured manner, supporting faster decision-making processes. In retail businesses that handle valuable products and complex workflows, such as jewelry stores, operational efficiency and data accuracy are critical factors for sustainability.

Many jewelry stores still rely on manual, paper-based systems to manage customer orders, production workflows, and inventory records. This approach often leads to miscommunication between departments, data loss, and difficulties in tracking the progress of orders [1]. Handwritten records can be damaged, misplaced, or misinterpreted, resulting in delays and potential financial losses. In addition, store owners face challenges in monitoring operational performance and inventory status in real time, limiting their ability to make informed strategic decisions.

Mobile applications offer a flexible and accessible solution to address these issues by enabling real-time data access and centralized information management [2]. By implementing a role-based system, different operational actors can be provided with specific functionalities and access rights according to their responsibilities [3]. This approach helps ensure data consistency, improves coordination among departments, and enhances transparency throughout the operational workflow.

This study aims to develop a role-based mobile application to support the digitalization of operational processes in a jewelry store environment. The application integrates order management, task assignment, progress tracking, and inventory management within a single system. The expected contribution of this work is to demonstrate how a mobile-based digital system can improve operational efficiency [4], reduce miscommunication, and enhance data accuracy compared to traditional manual practices.

## 2. Page layout

This study adopts a system development approach that focuses on transforming manual operational workflows into a structured digital process. The proposed solution is designed to centralize operational data, improve coordination among different roles, and provide real-time access to information related to orders and inventory [5].

### 2.1. System architecture

The developed system follows a client–server architecture, where the mobile application acts as the client and communicates with a backend server through application programming interfaces (APIs). The backend is responsible for processing business logic, handling authentication, and managing data transactions, while a relational database is used to store operational data such as user accounts, orders, task assignments, and inventory records.

This architecture enables real-time data synchronization between users and ensures that all operational activities are recorded in a centralized database. By separating the client and server components, the system also allows easier maintenance and future scalability.

### 2.2. Role-based workflow

The application implements a role-based system to ensure that each user can only access features relevant to their responsibilities. Three main roles are defined: sales, workers, and inventory administrators. Sales users are responsible for creating and managing customer orders, assigning tasks to workers, and verifying completed tasks. Workers receive assigned tasks, update task status through a checklist mechanism, and submit verification requests after completing their work. Inventory administrators manage stock data and verify inventory entries related to completed orders.

This role-based workflow helps maintain data consistency and reduces the risk of unauthorized access. It also improves transparency by allowing each operational stage to be monitored clearly within the system.

### 2.3. Database design

A relational database is designed to support the operational requirements of the jewelry store. The database consists of several interconnected tables, including user data, order data, task assignments, and inventory records. Relationships between tables are structured to ensure that each order can be linked to multiple tasks and corresponding inventory data.

The database design supports efficient data retrieval and ensures that operational information remains consistent throughout the workflow. By integrating inventory data with order completion, the system prevents orders from being finalized before the required stock information is properly recorded and verified.

## 3. System implementation

This section describes the implementation of the proposed system in the form of a mobile application. The application is designed to provide a simple and intuitive user interface while supporting the operational needs of different user roles.

### 3.1. Mobile application features

The mobile application provides core features such as user authentication, order creation, task assignment, progress monitoring, and inventory management. After logging in, users are directed to a dashboard that displays information relevant to their role. Sales users can view order summaries and create new orders, while workers can access assigned tasks and update their progress. Inventory administrators can manage stock records and verify inventory data associated with completed orders.

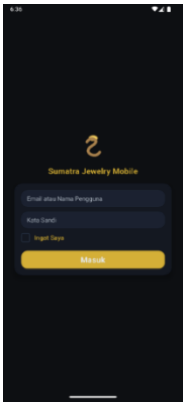


**Fig. 1:** Login interface of the mobile application showing role-based user authentication.

The user interface is designed to minimize complexity and ensure that users can perform their tasks efficiently. Key actions are presented through clearly labeled buttons and forms, reducing the likelihood of user error.


**Fig. 2:** Sales dashboard displaying order summaries and operational status information+

### 3.2. Order tracking mechanism

An order tracking mechanism is implemented to enable real-time monitoring of operational progress. Each order is divided into multiple stages corresponding to different tasks performed by workers. Progress is updated through a checklist system, allowing workers to indicate completed tasks and submit verification requests.


**Fig. 3:** *Create order interface used by sales users to input customer and order details*

Once a task is verified by the sales role, the order automatically proceeds to the next operational stage. This mechanism ensures that the workflow follows a predefined sequence and prevents tasks from being skipped. As a result, the system improves transparency and reduces miscommunication between operational roles.

## 4. Result and Discussion

The developed mobile application was successfully implemented to support the operational processes of the jewelry store by integrating order management, role-based task assignment, and inventory recording within a single system. The application enables users from different operational roles to access features according to their responsibilities, ensuring that data entry and process execution are clearly separated and well coordinated.

The implementation of the digital system demonstrates a significant improvement compared to the previous manual workflow. Order information that was previously recorded on paper can now be accessed and updated in real time through the mobile application. This

centralized data management reduces the risk of data loss and miscommunication between sales, production, and management roles, particularly during the order fulfillment process.

From an operational perspective, the role-based access mechanism contributes to better task accountability and workflow transparency. Each role is provided with a dedicated interface that presents only relevant information and actions, minimizing operational errors and simplifying daily activities. The order tracking feature allows management to monitor order progress more effectively, supporting faster decision-making when operational issues arise.

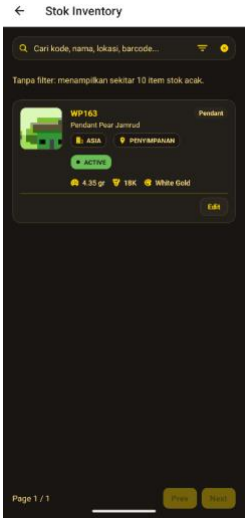


**Fig. 4:** Inventory stock list interface showing recorded product and stock information.

In addition, the inventory management feature supports more accurate stock monitoring by providing up-to-date information on available products. This functionality helps prevent discrepancies between recorded and actual stock conditions, which commonly occur in manual inventory systems. Overall, the results indicate that the proposed mobile application effectively supports the digitalization of operational activities and aligns with the objectives of improving efficiency, data accuracy, and coordination within the jewelry store environment.

## 5. Conclusion

This study has presented the development of a role-based mobile application to support the digitalization of operational processes in a jewelry store. The implemented system successfully integrates order management, task assignment, progress tracking, and inventory recording within a centralized mobile platform. By replacing manual paper-based workflows, the application improves data accuracy, enhances workflow transparency, and reduces the risk of miscommunication among operational roles.

The results indicate that the proposed system contributes to improved operational efficiency and provides store owners with better visibility of ongoing activities. The modular architecture and role-based approach also allow the system to be extended in future developments, such as the addition of notification services or web-based access, to further support business scalability.

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